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(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Moores, et al.

Application No.: 10/677,774   Group Art Unit: N/A

Filed: October 2, 2003   Examiner: Not Yet Assigned

For: VOICE RECORDAL METHODS AND
        SYSTEMS

CLAIM FOR PRIORITY AND SUBMISSION OF DOCUMENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant hereby claims priority under 35 U.S.C. 119 based on the following prior foreign application filed in the following foreign country on the date indicated:

Country	Application No.	Date
Great Britain	GB 0108603.2	April 5, 2001

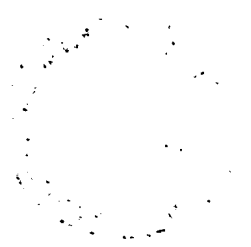In support of this claim, a certified copy of the original foreign application is filed herewith.

Dated: November 19, 2003

Respectfully submitted,

By _____
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I also certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.
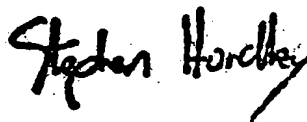
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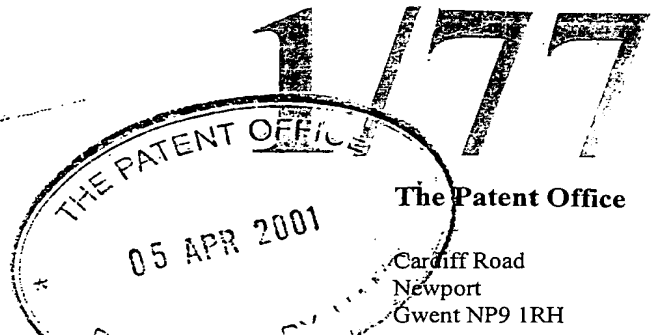
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1.	Your reference	N01/0216/GB

06APR01 E619948-1 C03008
F01/7700 0.00-0108603.2

2.	Patent application number *(The Patent Office will fill in this part)*

0108603.2

-5 APR 2001

3.	Full name, address and postcode of the or of each applicant *(underline all surnames)*	Toby Moores 35K Western Boulevard Leicester LE2 7HN England
	Patents ADP number *(if you know it)*	784 5555001
	If the applicant is a corporate body, give the country/state of its incorporation	

4.	Title of the invention	Voice Recording Methods and Systems

5.	Name of your agent *(if you have one)*	McNeight & Lawrence
	"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*	Regent House Heaton Lane Stockport Cheshire SK4 1BS England
	Patents ADP number *(if you know it)*	0001115001

David Kelthe Associates, 12 New Fetter Lane, London, EC4A 1AG 4016502006

		Country	Priority application number *(if you know it)*	Date of filing *(day / month/ year)*
6.	If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications *(and if you know it)* the or each application number			

		Number of earlier application	Date of filing *(day / month/ year)*
7.	If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application		

8.	Is a statement of inventorship and of right to grant of a patent required in support of this request *(Answer 'Yes' if:* *a) any applicant named in part 3 is not an inventor, or* *b) there is an inventor who is not named as an applicant, or* *c) any named applicant is a corporate body.* *See note (d))*	Yes

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    Request for preliminary examination   1
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    Request for substantive examination
    (Patents Form 10/77)

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11.	I/We request the grant of a patent on the basis of this application.
	Signature *Mc Neight & Lawrence* Date
	McNeight & Lawrence 5th April 2001

12.	Name and daytime telephone number of person to contact in the United Kingdom	David L. McNeight 0161 480 6394

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Voice Recording Methods and Systems

Field of the Invention

The present invention relates to methods and systems for recording a conversation or a message.

5 Summary of the Invention

In general terms the present invention proposes that individuals hold conversations, or leave messages for each other, using a communication system which records at least their voices. The users are permitted to annotate the recordings with tags indicating points or portions of the
10 recordings having particular meanings.

It is particularly advantageous if the locations where the messages or conversations are stored are accessible to multiple individuals (e.g. the individual(s) who recorded them, and/or other individuals), i.e. they are "shared".

15 Brief description of the Figures

Non-limiting embodiments of the invention will now be described, for the sake of example only, with reference to the following figures, in which:

Fig. 1 shows a first embodiment of the invention; and

Fig. 2 shows a second embodiment of the invention.

20 Detailed Description of the embodiments

Referring to Fig. 1, a first embodiment of the invention is shown schematically including first and second telephone communication devices 1, 3. These are drawn as mobile phones having a screen 13, but the invention is not limited in this respect, and the invention is applicable to any telephone devices,

including video telephones in which the screen of the communication devices includes an image of the user of the second communication device 3. Alternatively, they may be computer apparatus such as PCs or Net terminals with a microphone and telephone compatibility.

5   Furthermore, the telephone devices may be any future system which transmits in addition to a voice signal (and optionally video signal) other data, e.g. streamed with the voice signal. For example, the other data may be text words, such as words which visually represent what either individual says.

The two communication devices 1, 3 communicate via a communication
10   network indicated by reference numeral 5, which may be of any form, such as an existing public telephone system (usually referred to as a PSTN). The connections between the communication devices 1, 3 and the network 5 are indicated as lines 7, 9, but while it is possible for this connection to be made by fixed lines such as electrical cables or optical fibre, the connections to the
15   network 5 may equally be of any other known or future form, such as wireless (e.g. radio) connections.

Optionally, either or both of the units 1, 3 may be units of respective communication networks (e.g. mobile phone networks) operated by respective exchanges which are not shown explicitly in Fig. 1. These exchanges are
20   connected to the public telephone system 5, and are subsumed in the connections 7, 9.

The communication network 5 is also connected to a computer system 11 (e.g. server) having a storage facility. Preferably either user of the communication devices 1, 3 can choose whether or not to enable the
25   computer system 11, that is to place the computer system into a state in which it is party to the conversation. The enablement of the computer system can be done at the time when the conversation is initiated, or optionally at any point during the conversation. Optionally, either of the users can also disable

the computer system at any time, so that it is not party to the conversation. In the case that they do decide enable the computer system 11, the computer system 11 is supplied with information identifying the devices 1, 3 and/or their users. The identification of the user(s) and/or device(s) to the computer system 11 may include accessing an account for one or both of the users and/or devices maintained at the system 11, by an identity verification procedure of a conventional kind.

Preferably, when the computer system 11 is in its enabled state, the users are able to indicate to the computer system 11 which portion(s) of the telephone conversation it should record. For example, at any point in the conversation either of the users may be able to transmit a "record" instruction or a "terminate recording" instruction to the computer system 11 to initiate or terminate recording. There is preferably no limit on the number of portions of telephone call the computer system 11 may record.

Optionally, the computer system may make two separate recordings of the conversation. Each of these recordings may be made under the control of a respective one of the users, such that each user indicates to the computer system which portions of the conversation to include in his own recording.

Note that the system may be arranged such that the computer system 11 is enabled for all conversations (e.g. all conversations involving a given user), and/or that (e.g. as a default state) it is set to record all of each conversation for which it is enabled.

The users of devices 1, 3 then carry out a conversation. The computer system 11 receives the entire conversation, and stores a recording of it. In the case that the conversation includes video telephony, the recording preferably includes a recording of the video portion as well as a recording of the audio (voice) portion. The recording is stored within the computer system 11 in association with indexing data including the received identity of the user(s)

and/or the device(s) 1, 3. The indexing data further includes the time and date of the conversation.

The computer system 11 is adapted to add one of a predetermined set of tags to the recording under the control of either or both of the users. That user, or those users, can control the computer system 11 to add those tags during the ongoing conversation ("on the fly"), and/or after the conversation is finished (e.g. at a time when the user reconnects to the computer system 11, and possibly completes an additional self-identification procedure as described above, before accessing the recording using the indexing data to identify it).

Optionally, each of the tags may be one audio tone, or a sequence of audio tones, inserted or overlaid onto the recording of the conversation. For example, each audio tone may be a DTMF code associated with a respective one of the keys 15. A user can add a tag which is a single DTMF tone by keying the respective key, or a tag which is a plurality of tones by keying the corresponding sequence of tags.

Each tag has a respective meaning, and the tags are identifiable automatically (e.g. in the case that the tags are DTMF tones, well-known technology exists to identify them automatically). The users of devices 1, 3 (and/or anyone else having an access status recognised by the computer system) may extract the recording and replay it. At this stage, the information stored by the tags is of value.

For example, when the recording is re-played using one of the telephones 1, 3, a message may be displayed on the screen indicating the meaning of any tag which is encountered. Furthermore, when the recording is re-played, the telephones 1, 3 may actually reproduces the tones using their sounders, so that the user may recognise their meanings for himself.

Some possible tags might have the respective meanings of (i) the beginning or (ii) the end of business negotiations, (iii) the beginning or (iv) the end of discussions concerning transport arrangements, etc. Other examples of possible tag meanings will be clear from later portions of the present text.

5   Furthermore, the mode of replaying may be modified according to the tags. For example, a user listening to the recording may have the option to jump at any moment to the next tag (or to the next tag of any given type(s)).

Furthermore, any recording may be edited (within the computer system 11, or after the recording has been extracted from the computer system, optionally

10   leaving a copy of the recording there) based on the tags.

For example, the recording may be transformed into a second recording which, when played, omits sections delineated by pairs of the tags of certain type(s). This editing is preferably non-destructive, such that the portions of the first recording which are omitted when the second recording is played, are

15   merely "hidden" and can be restored on demand.

In a further example, the tags may be used to enhance a presently existing editing technique, such as one which eliminates silences, or detects changes in the speaker. This may be done for arranging for the tags to have meanings associated with those functions, e.g. a tag indicating the start or end of a

20   silence, or a tag indicating a change of speaker.

A further example is that the tags can be used collectively to generate further annotation. For example, the recording can be reviewed automatically to identify regions of interest or "value" based on the observation of predefined patterns of tag usage. For example, regions of the recording containing tags

25   with a statistical frequency above a certain coefficient (or simply of higher than average statistical frequency) can be labelled as interesting. The very presence of certain sorts of tags may be enough to influence this annotation

by "value", e.g. there can be a tag meaning "high value" and/or a tag meaning "low value".

Note that, whereas tags are preferably associated with exact points in the recording, or portions of the recording with well-defined ends set by the tags,

5 the "value" parameter may be defined continuously over some or all of the recording, for example varying according to the distance to the nearest tag(s) of certain type(s).

Subsequently, the editing procedures described above can be performed based on the assigned "value". For example, passages of low value may be

10 omitted or hidden, and/or passages of high value may be transmitted to specified individuals. Furthermore, portions of high "value" may be stored (e.g. in the computer system 11) at a preferential compression rate, or selected for automatic summarisation.

Note that the editing procedure may include automatically removing some or

15 all of the tags (e.g. the tags of given type(s)).

Preferably, the annotated recordings created by the first embodiment can be forwarded to other individuals, or portions of them defined by the tags may be forwarded.

Although the invention has been explained above in relation to a

20 conversation, any recording may also be a message left in the computer system 11 by a single user with the tags (added at the time or subsequently) providing annotations of the messages. The messages are for subsequent retrieval by one or more other users specified by data associated with the message. For example, the owner of communication device 1 may access the

25 computer system 11 and leave a message annotated with tags of a plurality of types for subsequent retrieval by the owner of communication device 3.

It is particularly convenient if the system 11 is one, such as the exchange of a mobile telephone network, which also stores messages without tags, and conventional email messages.

Preferably, users (with appropriate access status) are able to access the computer system 11 not only via telephones but using computers such as PCs. More generally, the access to the computer system 11 may be using browser software.

Any device having a screen (e.g. the PC or the phones 1, 3) may also be able to access the computer system 11 and see a visual representation of a given recording, for example as a timeline having icons of types corresponding to the types of respective tags. The icons are in an order corresponding to the order of the corresponding tags in the recording. They may be equally spaced along the timeline, or be at locations along the timeline spaced corresponding to the spacing of the corresponding tags in the recording.

Note that it is not necessary that both of the "users" of devices 1, 3 are human. Rather, the invention can usefully be employed when one of users is a machine, generating machine-generated voice signals (e.g. computationally or by playing a predetermined recording) operating a telephone device which is simply an interface between the machine and the communication network. In this case the "conversation" between the users may have little or no information passed from the human user: it may for example consist of the human user phoning the machine to establish the communication and then annotating sounds automatically generated by the machine.

A second embodiment of the invention is shown in Fig. 2. Whereas in the first embodiment, the computer system 11 was not especially associated with either of the users (but rather has its own operator, such as the operator of the network 5), in the embodiment of Fig. 2, the computer system 17 is associated with the communication device 1. Indeed, although Fig. 2 shows

them as separate but connected units, computer system 17 may be physically part of the communication device 1.

Note that in the case described above in which the communication device 1 is part of a communication network operated by an exchange (not shown) which communicates with the network 5, the computer system 17 may be connected either directly to the unit 1 or to the exchange associated with the unit 1. Fig. 2 is intended to cover both of these two cases.

We now discuss two scenarios in which an embodiment of the invention is used. In the following description the reference numerals used are those of the first embodiment of the invention, but the second embodiment would also be suitable.

A first scenario concerns an individual Andrea, the owner of mobile telephone 1, who is working away from her office. Andrea checks her e-mails using a PC, and finds that an individual Paul has sent Andrea three annotated phone conversations created by the first embodiment of the invention. Andrea skims through the conversations she has been sent.

The next day, she uses her mobile phone 1 to call the Los Angeles Police Department to arrange for two officers to marshal traffic at a location the following week. During the conversation, which is recorded by the computer system 11, she is given a reference number and a contact phone number, together with a list of details to get back with. She flags all these points on the fly by pressing keys 15 (which adds DTMF tones to the recording) and saves the conversation in the system 11. The tags may be tags which specify that a phone number is present, or alternatively tags which do not have this specific meaning.

She then uses her phone 1 calls up the tourist office at Big Sur and gets a list of hotels in the area. As she talks, she uses the keys 15 to signal to the computer system 11 to flag the phone numbers of several suitable hotels.

5 She then contacts the system 11 directly (which may be done simply by phoning a certain number) and leaves a short message on the computer system 11 to be read by another individual Duncan. This message is attached to an annotated copy of a phone conversation she had with the client, and forwarded to Duncan. She labels one short portion of the message as particularly important, by placing respective kinds of tags at either end of it.

10 Andrea remembers a previous conversation with a colleague about restaurants. She accesses the conversation by connecting to the computer system 11 on her mobile telephone 1 and skips to a point tagged with a tag associated with "entertainment", where a certain restaurant was mentioned. She notes the phone number then makes a reservation for that night.

15 After dinner, Andrea spends 30 minutes editing her files of phone conversations. She does this by going through and inserting respective kinds of tags to indicate portions of different meanings, automatically determining the interest value at each point, and then automatically erasing the parts for which the value indicates that they are of little interest. She copies several 20 phone numbers into her SIM card. Finally, she calls her mother for a chat. Her mother gives Andrea her brother's temporary address, which Andrea flags within the record of the call stored on the computer system 11.

The second scenario concerns an individual Duncan

On a given day, Duncan uses his telephone 1 to assess the system computer 25 11, and skims through a message left by Andrea the previous day. It contains an annotated conversation with a client showing disagreement over the job budget. Duncan needs to follow this problem up.

His assistant Paul accesses the system computer 11, goes through the history of communications with the client, and sets up a meeting for that afternoon. Paul copies Duncan the relevant correspondence, e-mails and a phone message containing several forwarded audio clips from computer

5   system 11.

When Duncan skims through the clips using the tags as reference points, he finds confirmation of the terms that were agreed on Andrea's budget. Duncan asks Paul to record and annotate the meeting using his a microphone and his mobile phone 3 to transfer the recording of the meeting made by the

10   microphone to the computer system 11.

Duncan has an important meeting at 11.00am with a potential client. To help prepare for this, Paul has accessed an audio file stored in the computer system 11 in which Andrea makes a presentation to a different client.

He also forwards one of the files to the mobile phone of the first client. The

15   first client listens to the presentation and agrees he would like Andrea to be part of a project they are collaborating on.

Duncan then has a meeting with the first clients to discuss the budget. Duncan reminds the client of various items of correspondence, and clears up any ambiguity by playing a clip that Paul has retrieved from the computer

20   system 11 earlier.

Before going to bed, to remain on top of a scheduling problem, Duncan leaves a message to himself on the computer system 11 in the form of a long, annotated list of urgent actions, each given a tag of a sort indicating its importance level. He forwards a copy to Paul's mobile phone.

25   The next day, Duncan has a meeting at a client's office in San Francisco. Duncan knows that the computer system 11 is storing some records of the early brainstorming sessions. Paul had recorded and annotated these

sessions. Duncan refers to his diary to find the date and time of these sessions. With this information he can locate the relevant recordings by accessing the computer system 11 on his mobile phone. To access the computer system 11, he enters his user-name and password then locates the recordings, one by one. He skims through the first session, jumping from tag to tag until he finds a 'magic moment'.

Claims

1.   A method of communication between at least two individuals including:

the two individuals conversing using respective telephone communication devices, a recording being made of at least part of the

5   conversation;

at least one of the individuals associating one or more tags with selected respective points or portions of the recording, each tag being automatically interpretable and indicating a meaning of the respective point or portion of the recording; and

10   storing the recording and tags in a location accessible by at least one of the two individuals.

2.   A method according to claim 1 in which the location is accessible to both of the two individuals.

15

3.   A method according to claim 1 in which the location is accessible to individuals other than the said two individuals.

4.   A method according to any of claims 1 to 3 in which one of the

20   individuals is a machine generating voice signals automatically.

5.   A method according to any of claims 1 to 3 in which the tags are selected from a predetermined plurality of possible tags.

25   6.   A method of communicating a message from a first individual to a second individual, including:

the first individual using a telephone communication device and a telecommunications network to transmit a recording of a message for the

second individual to a storage location accessible at least by the second individual;

the first individual or the second individual associating one or more tags, each selected from a plurality of predetermined tag types, with selected respective points or portions of the recording, each tag being automatically interpretable and indicating a meaning of the respective point or portion of the recording; and

storing the tags in said location.

7.   A method according to claim 6 in which the first individual is a machine generating voice signals automatically.

8.   A method according to any preceding claim in which the association of tags with the portions of the recording is performed using at least one of the communication devices, the possible tags being associated with respective keys of that communication device and the tags being selected by selecting the respective keys.

9.   A method according to claim 6 in which the recording is recorded as an audio track, and the tags are DTMF tones added to the audio track.

10.   A method according to any preceding claim in which the association of at least one of the tags is performed while the conversation is still proceeding.

11.   A method of reviewing the recording produced by a method according to any preceding claim, the method including automatically locating the portions of the recording using the tags and reviewing sections of the recording determined by the tags.

12.   A method according to claim 11 which includes displaying a visual representation of the conversation including symbols indicating locations of the tags within the recording.

5   13.   A method of processing the recording produced by a method according to any of claims 1 to 10, the method including automatically locating the points or portions of the recording using the tags and processing the recording based on the meaning of the tags.

10   14.   A method according to claim 13 in which said processing includes selecting at least one segment of the recording based on the tags, and generating an edited version of the recording including **or excluding** the at least one segment.

15   15.   A method according to claim 13 in which said processing includes using the tags to determine, for differing sections of the recording, differing values of an interest parameter indicating the interest of those sections of the recording.

20   16.   A communication system including:
        at least two telephone communication devices;
        a communication network for communicating between the
communication devices;
        a recording device accessible using the communication devices, the
25   recording device being for recording a conversation between the
communication devices; and
        means for associating one or more tags with selected respective
portions of a recording recorded by the recording device.

30   17.   A communication system including:

at least two telephone communication devices;

a communication network for communicating between the communication devices;

a recording device accessible using the communication devices, the

5   recording device being for recording a message left by one of the communication devices for retrieval by another of the communication devices; and

means for associating one or more tags, each tags being a selected one of a plurality of types, with selected respective portions of the message

10   recorded by the recording device.

18.   A communication system according to claim 16 or claim 17 in which the recording device is associated with an operator of the communication network and is remote from the communication devices.

15

19.   A communication system according to claim 16 or claim 17 in which the recording device is associated with one of the communication devices, and is proximate or connected to that communication device.

20   20.   A communication system according to any of claims 16 to 19 in which the communication devices are video telephone devices.
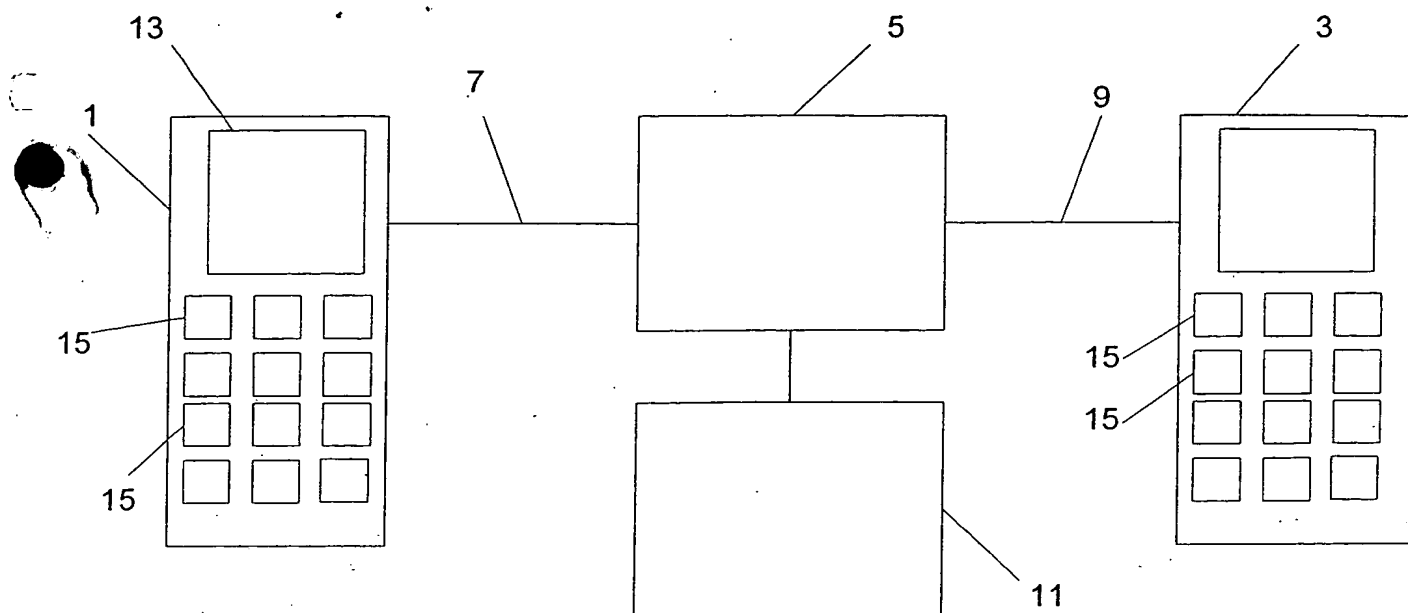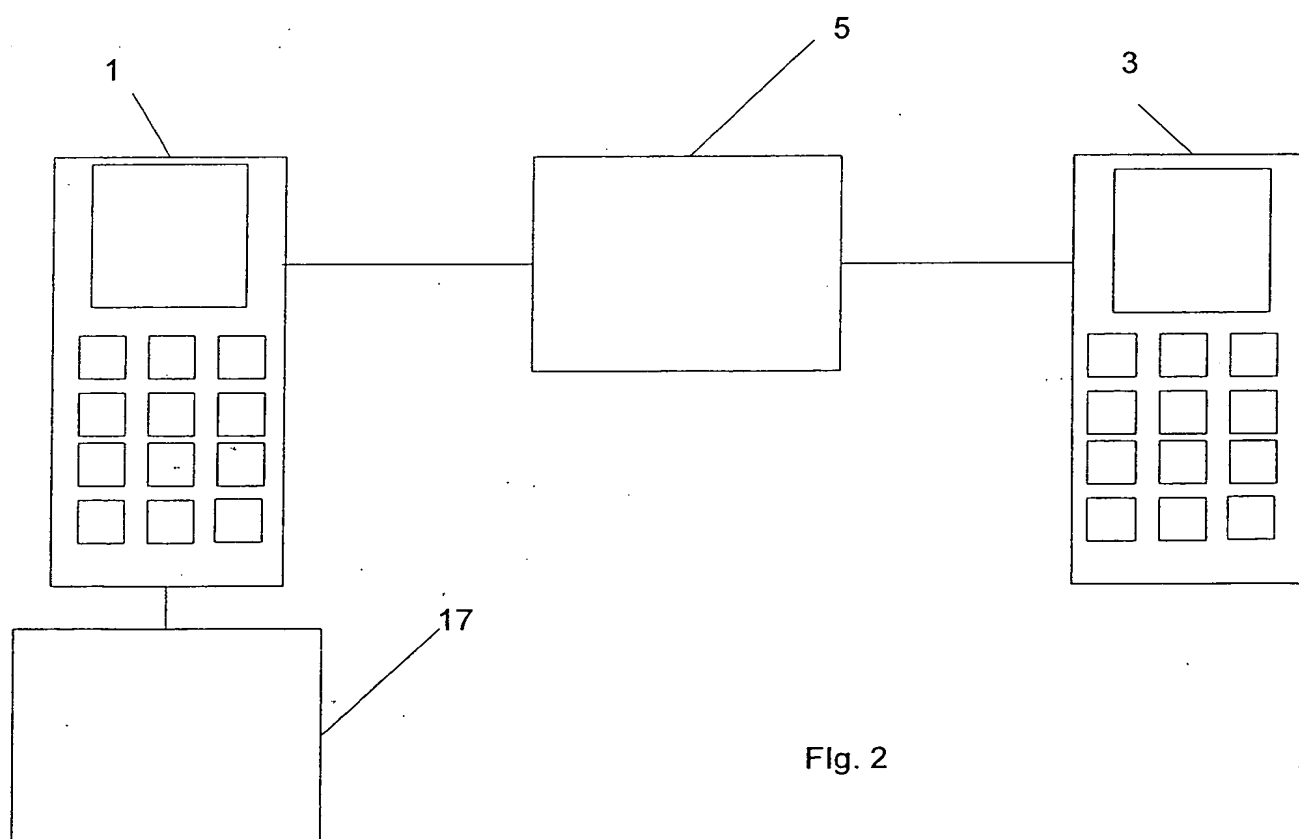
Fig. 1

Fig. 2